a1

said volatile oxide being compensated, in the case of excess charge, by another addition of a bivalent metal substituting for Fe^{3+} to ensure the valency balance.

4. (Amended) Process according to claim 1 wherein said mixture is calcinated:

-either in two stages: at a temperature comprised between 1225°C and 1275°C for less than 5 minutes, then at a temperature comprised between 1100°C and 1150°C for at least 30 minutes,

-or in a single stage at a temperature comprised between 1200°C and 1300°C, for a time comprised between 30 and 90 minutes.

5. (Amended) Process according to claim 1 wherein said grinding is constituted of a dry grinding or comprises a humid phase grinding, the dry or humid grinding being carried out in the presence of metallic or ceramic grinding elements, typically bars or balls loaded with or constituted of ZrO_2 or tungsten carbide WC, the low contents of Zr or W, typically between 0.05 and 0.5% by weight of said mixture, transferred by wear and rubbing of said bars or balls to said mixture, or added to said mixture, acting under finely dispersed form as ACM agent.

6. (Amended) Process according to claim 1 wherein one provides an iron oxide Fe_2O_3 with an average particle size

comprised between 0.25 and 1 µm and in which one replaces said grinding of stage a) under 2), by a dry mixture or a dispersion in humid phase.

7. (Amended) Process according to claim 1 wherein one furthermore incorporates into said mixture a particle size control agent, abbreviated as ACTP, typically silica, calcium oxide, a derivative of silica, or a combination of silica and calcium oxide, typically $CaSiO_3$, with a content in equivalent silica comprised between 0.1 and 1% by weight of said mixture.

8. (Amended) Process according to claim 1 wherein the ratio n is equal to 6 ± 0.1.

9. (Amended) Process according to claim 1 wherein the ratio n is chosen equal to 5.9 ± 0.1.

10. (Amended) Process according to claim 1 wherein the ratio n is chosen equal to 5.85 ± 0.15.

11. (Amended) Process according to claim 1 wherein one incorporates into said mixture substitution trivalent products B for A, chosen among Bi, La and rare earths, typically under the form of oxides, and bivalent products C for Fe3+ substitution, chosen among Ni, Co, Mg, Cd, Cu, Zn, in such a way as to balance the valencies, with a content chosen to form ferrites of formula $A_{1-x}B_xC_xFe_{12-x}O_{19}$, with x ranging between 0.05 and 0.45.

12. (Amended) Hexaferrite cake having an apparent density

a'

lower than 3 and an average particle size comprised between 0.25 and 1 µm, obtained by the process according to claim 1, in which said dispersion is suppressed replacing said stage c) of grinding.

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